

REMARKS

The present application was filed on January 23, 2004 with claims 1 through 30. Claims 1 through 30 are presently pending in the above-identified patent application.

In the Office Action, the Examiner rejected claims 1, 2, 6-10, 14-18, 21-25, and 28-30 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement, and under 35 U.S.C. §102(e) as being anticipated by Schafer et al. (United States Patent Number 6,134,267). The Examiner indicated that claims 3-5, 11-13, 19, 20, 26, and 27 would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

Section 112 Rejections

Claims 1, 2, 6-10, 14-18, 21-25, and 28-30 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Regarding independent claims 1, 9, 17, and 24, the Examiner asserts that there does not appear to be a written description of the claimed limitation “a first subset of said plurality of sub-carriers are allocated pursuant to a standard for transmission of information and a second subset of said plurality of sub-carriers are allocated pursuant to said standard as inactive subcarriers that do not carry information.”

Applicants note that the utilization of standards for OFDM systems was initially discussed in the Background section of the present disclosure, where Applicants presented the European digital broadcasting standard as an example of a system that broadcasts a TII signal. A person of ordinary skill in the art would recognize that such standards *specify the use of one or more sub-carriers for the transmission of information and specify one or more (inactive) sub carriers that do not carry information*. In the Background section, Applicants also pointed out several deficiencies of such standards (page 2, lines 5-15, of the originally filed disclosure) that are addressed by various aspects of the present invention, and presented several embodiments that are compatible with such standards (pages 4-12). In light of these teachings, a person of ordinary skill in the art would recognize that the claimed invention may be implemented in the

context of such standards. In addition, since the teachings and embodiments disclosed in the present specification are compatible with such standard systems, a person of ordinary skill in the art would be enabled to implement the claimed invention utilizing the present disclosure and such standards.

Independent Claims 1, 9, 17 and 24

Independent Claims 1, 9, 17, and 24 were rejected under 35 U.S.C. §102(e) as being anticipated by Schafer et al.

The present invention is directed to techniques for transmitting an identifying signal in an orthogonal frequency division multiplexing system. Each independent claim generally requires transmitting (or receiving) an “identifying signal on inactive sub-carriers, wherein the identifying signal identifies a transmitter.”

Regarding the transmitter claims 1 and 9, for example, the Examiner asserts that Schafer teaches “means 8 for inserting an identifying signal TII on inactive sub-carriers (col. 1, lines 31-35; the TII signal is inserted in a null symbol (inactive sub-carriers)).”

Applicants note that Schafer teaches that the “method to detect transmitter identification information in a DAB stream according to the present invention comprises the following steps: a) differential demodulation of TII pairs included in the spectrum of every second *null symbol* of the incoming DAB stream to respectively obtain a demodulated null symbol spectrum.” (Col. 2, lines 35-41; emphasis added.)

In one preferred embodiment, the present invention makes use of inactive sub-carriers at the edges of the information carrying sub-carrier groups to transmit the TII. When discussing “sub-carriers,” it is clearly in the frequency domain. Thus, the exemplary embodiment of the present invention can be viewed as transmitting TTAAAAAAAAATT, where frequency is along the horizontal axis, A corresponds to the active (information carrying) sub-carriers, and T is the TII carrying sub-carriers that were previously inactive and now have been activated in accordance with the present invention. In the time domain, the sequence would be: TTAAAAAAAAATT in the first time slot, TTAAAAAAAAATT in the second time slot, and

TTAAAAAATT in the third time slot. Thus, in each time interval, the inactive sub-carriers at the edges (i.e., first two and last two sub-carriers) carry the TII identifier.

The transmission in the frequency domain over time, according to the cited ETS standard, on the other hand, can be viewed as transmitting AAAAAAAA at time 1; 000000000000 at time 2; and AAAAAAAA at time 3. Thus, the second time interval constitutes a null symbol. This is the sequence of symbols (in time) with each symbol written out as frequency content. Schafer proposes to insert TII pairs in the spectrum of every second **null symbol**. Thus, the frequency domain over time, according to Schafer, can be viewed as transmitting AAAAAAAA at time 1; 0000000TT00000000 at time 2; and AAAAAAAA at time 3. Thus, Schafer takes the null symbols (i.e., where all sub-carriers were muted according to the ETS standard) and then inserts the TII on one or more of the **active** sub-carriers. The sub-carriers that carry the TII for the null symbol carry data in other time intervals.

As set forth in the present specification, at page 3, line 9, inactive sub-carriers are the “**unused**” sub-carriers, as would be apparent to a person of ordinary skill in the art.

Please note that the independent claims require transforming said modulated signal to create an OFDM signal having a plurality of sub-carriers *wherein a first subset of said plurality of sub-carriers are allocated pursuant to a standard for transmission of information and a second subset of said plurality of sub-carriers are allocated pursuant to said standard as inactive subcarriers that do not carry information*; and transmitting or receiving said identifying signal on one or more of said inactive sub-carriers for at least a portion of time. Support for this amendment can be found on pages 2-6 of the originally filed specification. The transmission of a TII during a null symbol does not infer that the transmission of the symbol is performed utilizing inactive sub-carriers, as would be apparent to a person of ordinary skill in the art. In fact, the sub-carriers in Schafer that carry the TII during the null symbol carry data in other time intervals.

Thus, Schafer et al. do not disclose or suggest transforming said modulated signal to create an OFDM signal having a plurality of sub-carriers wherein a first subset of said

plurality of sub-carriers are allocated pursuant to a standard for transmission of information and a second subset of said plurality of sub-carriers are allocated pursuant to said standard as inactive subcarriers that do not carry information; and transmitting or inserting said identifying signal on one or more of said inactive sub-carriers for at least a portion of time, as required by independent claims 1 and 9, and do not disclose or suggest transforming said received signal to recover an OFDM signal in the frequency domain having a plurality of sub-carriers wherein a first subset of said plurality of sub-carriers are allocated pursuant to a standard for transmission of information and a second subset of said plurality of sub-carriers are allocated pursuant to said standard as inactive subcarriers that do not carry information; decoding said OFDM signal; and processing said identifying signal received on one or more of said inactive sub-carriers for at least a portion of time, wherein said identifying signal identifies a transmitter, as required by independent claims 17 and 24.

Dependent Claims 2-8, 10-16, 18-23 and 25-30

Dependent claims 2, 6-8, 10, 14-16, 18, 21-23, 25, and 28-30 were rejected under 35 U.S.C. §102(e) as being anticipated by Schafer et al.

Claims 2-8, 10-16, 18-23 and 25-30 are dependent on claims 1, 9, 17, and 24, respectively, and are therefore patentably distinguished over Schafer et al. (alone or in any combination) because of their dependency from independent claims 1, 9, 17, and 24 for the reasons set forth above, as well as other elements these claims add in combination to their base claim. The Examiner has already indicated that claims 3-5, 11-13, 19, 20, 26, and 27 would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

All of the pending claims, i.e., claims 1 through 30, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,



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